

Centennial of Flight celebration

Center Director shares thoughts on first flight

In 2003, NASA joins this Nation in celebrating a century of powered flight propelled by the Ohio-born Wright Brothers. The Agency, with strong participation by Glenn, will celebrate this anniversary through various events on and off-site. Center Director Donald Campbell and aviation enthusiast shares some views on this milestone.

Q. What are your thoughts on this Nation's 100th anniversary of flight?

A. We've come a long way in 100 years. Many people had thought about flying—but no one at that time in history understood what it took to fly. When you look back at how the Wright Brothers started out with a 12-horsepowered engine and then look at what we do now—we've got engines, such as the GE90, that are large enough that people can walk into the inlet! It's amazing when you realize

how much we have depended on technology achievements.

Q. Glenn has the benefit of many great facilities and technology. What do you think the Wright Brothers would have accomplished if they had the resources we have today?

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C-2002-2071

Photo by Marvin Smith

The Wright Brothers' Tom Benson (left), Engine Systems Technology Branch, and Roger Storm (center), Fairview High School, explain the design of their kite to Center Director Campbell.

Space director and R&T deputy bid Center farewell

BY S. JENISE VERIS

A wealth of experience and leadership goes out the gate when Gerald "Jerry" Barna, director of Space, and Dr. Lawrence "Larry" Bober, deputy director

of the Research and Technology Directorate, retire effective January 3.

Barna was responsible for Glenn's space programs and the personnel who staff the major space flight projects conducted in support of NASA's space missions. His career reflects the progression of a man who came up through the ranks from performing system analyses and studies to project management to line management with increasingly larger and more complex organizations in support of NASA missions.

"Ultimately, a person's career comes down to choosing the path you want to

follow, without being afraid to change," Barna said. "Getting involved in project

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Barna



Dr. Bober

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Two senior executives receive prestigious recognition for service

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Across the Agency

Parachute recovery system research

In October 2002, a pilot released the parachute of his single-engine aircraft and landed safely in a Texas mesquite-tree grove. The pilot was uninjured, and there was minimal damage to the plane. The successful "save" was made possible through Langley's Small Business Innovation Research (SBIR) program and Ballistic Recovery Systems, Inc., of South St. Paul, MN. Propelled by a solid-fuel rocket motor, the parachute is released from a special opening on top of the fuselage. Three Kevlar-webbing straps connect the parachute to the airframe and help guide it through a level descent. This technology will be part of the suite of innovations available to NASA's Small Aircraft Transportation System research program with additional SBIR funding in place for development of a larger parachute for the new generation of minijets.

NASA shares universe with visually impaired



A new book of majestic images, taken by NASA's Hubble Space Telescope (HST), brings the wonders of our universe to the fingertips of the visually impaired. The 64-page book, titled *Touch the Universe: A NASA Braille Book of Astronomy*, takes the reader on a cosmic journey that begins with HST orbiting Earth, and then traveling outward into the universe, presenting stunning color images such as planets, nebulae, stars, and galaxies. Each image is embossed with lines, bumps, and other textures. The raised patterns translate colors, shapes, and other intricate details of the cosmic objects, allowing

visually impaired people to feel what they cannot see. Braille and large-print descriptions identify each of the book's 14 photographs. Noreen Grice, operations coordinator for the Charles Hayden Planetarium at the Boston Museum of Science, coauthored the book with Bernhard Beck-Winchatz, an astronomer at DePaul University in Chicago. It is published by Joseph Henry Press, trade imprint of the National Academies Press.

Music is out of this world

With detection instruments on NASA's Voyagers, Galileo, Cassini, and more than two dozen other spacecraft, University of Iowa physicist Dr. Don Gurnett has been recording waves that course through the thin, electrically charged gas pervading the near-vacuum of outer space for nearly 40 years. Composer Terry Riley compiled a 10-movement musical composition called "Sun Rings" from the melody fragments and ideas recorded from the spacecraft and collected near Jupiter, Venus, and other planets. The Grammy-nominated Kronos Quartet premiered the piece at the University of Iowa's Hancher Auditorium in October. The NASA Art Program has commissioned artists to document the Agency for over 40 years. It also supports art projects designed to reach diverse communities across the country. For more information about the NASA Art Program, contact Bertram Ulrich, curator, at 202-358-1713.

Automotive emissions reduction

NASA's laser technology may soon be part of your car's exhaust system. Originally designed for satellites to measure the chemical makeup of the Earth's atmosphere, Low-Temperature Oxidation Catalysts (LTOC) will soon be available for commercial use. The LTOC is a collection of technologies that enables the destruction of pollutant gases such as carbon monoxide and hydrocarbons as well as NO_x species. Developed at Langley, LTOC technology is expected to reduce automotive pollution emissions by approximately 30 percent and the cost of aftermarket catalytic converters by 25 percent. Airflow Catalyst Systems, Inc., Rochester, NY, is the exclusive licensee for the internal combustion application. NASA is still accepting licensing applications for other LTOC technologies through the technology commercialization program.

Spence Armstrong retires from NASA

Spence "Sam" Armstrong, senior advisor to NASA Administrator Sean O'Keefe, retired from NASA on December 31.



Armstrong

As senior advisor, Armstrong promoted partnerships with academia, the Department of Defense, and industry. During his 11 years at NASA, Armstrong has been honored with the Presidential Rank of Meritorious Executive and NASA's Outstanding Leadership medal and Exceptional Service medal. Before joining NASA, he served for 34 years in the U.S. Air Force, retiring with the rank of lieutenant general. ♦

Nicogossian retires after 30 years



Dr. Nicogossian

Dr. Arnould E. Nicogossian, M.D., retires after more than 30 years at NASA to join the School of Public Privacy at George Madison University Fairfax, VA as head of the Office of Medical Policy.

Since June 2001, Nicogossian has been senior advisor to the NASA Administrator for Agencywide issues related to health care provisions and aerospace medicine.

Throughout his NASA career, Nicogossian has contributed greatly to the NASA mission ensuring crew health. He was instrumental in establishing the NASA Office of the Chief Health and Medical Officer, serving as its first doctor in 2000.

Nicogossian has received numerous honors and awards such as NASA's Distinguished Service medal and Contribution and Invention award, and the International Academy of Astronautics' Life Sciences Book award. ♦

NASA supports robotic competition

Heavy metal will rock—and roll—at seven different locations across the country as high school students and engineers team with their robotic creations to take center stage at NASA-sponsored regional robotics competitions and a final national championship in April 2003.

Following the FIRST (For Inspiration and Recognition of Science and Technology) competition kickoff on January 4, these teams will begin to design a robot that can complete a specified set of tasks based on rules revealed during NASA TV's broadcast of the ceremony.

The goal of FIRST competition is to expose students to facets of engineering and technology through the excitement and experience of partnering with professionals to build a robot. Teams entering the competition are sponsored by NASA and a number of corporations.

NASA's Robotics Education Project, in collaboration with FIRST, is hosting 7 of the 23 regional competitions around the country. NASA-sponsored regional competitions will be held in Cleveland, OH, Richmond, VA, and St. Louis, MO (March 6 to 8); in Annapolis, MD (March 13 to 15); in Atlanta, GA (March 27 to 29); and in Seattle, WA, and Los Angeles, CA (April 3 to 5).

More information about the competition and FIRST is at <http://www.usfirst.org/>. Visit NASA's Robotics Education Project Web page at <http://robotics.nasa.gov>. ♦

FIRST LEGO Regional

Glenn, Cuyahoga Community College, and WireNet, with the help of a grant from the Martha Holden Jennings Foundation, hosted the inaugural Buckeye FIRST (For Inspiration and Recognition of Science and Technology) LEGO Regional robotics tournament on November 16 at Max S. Hayes Vocational School in Cleveland.

Students aged 9 to 14 vied for honors in this nationally recognized competition that requires teams of up to 10 children to design, construct, program, test, and develop a one-of-a-kind robot from a LEGO kit to solve an annual challenge. Winners advanced to the state tournament at Sinclair Community College in Dayton, OH. ♦



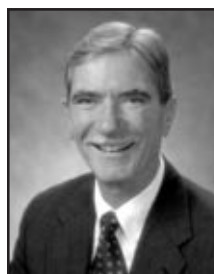
Photo by Carol Galica

A Glenn-sponsored SEMAA (Science, Engineering, Mathematics, and Aeronautics Academy) team was among 12 middle school teams that competed in the FIRST LEGO Regional.

Headquarters Appointments

Dr. J. Victor Lebacqz, associate administrator for Aerospace Programs at Ames Research Center, has been named deputy associate administrator for the Office of Aerospace Technology at NASA Headquarters. Lebacqz will assist Associate Administrator Dr. Jerimiah Creedon in developing integrated, long-term, innovative Agency-level technology for aeronautics and space. Lebacqz will also assist in developing new commercial partnerships that exploit technology breakthroughs.

George Reese, assistant administrator for Equal Opportunity Programs, has accepted a detail assignment with the Department of Education's White House Initiatives Office for Historically Black Colleges and Universities (HBCU's). Reese will be working with the initiative's director, Ambassador Leonard Speaman, and the President's Board of Advisors on HBCU's on how best to ensure the institution's long-term viability and enhancement.



Dr. Lebacqz



Reese

Dorothy Hayden-Watkins has been appointed assistant administrator for Equal Opportunity Programs, effective early 2003. Hayden-Watkins is the principal of Hayden-Watkins & Associates, an executive consulting firm providing technical advice and services in strategic planning, implementation, and evaluation of diversity and equal opportunity programs. ♦



Hayden-Watkins

NASA VISION

To improve life here,
To extend life to there,
To find life beyond.

Travel writers trek by

Newspaper and magazine travel writers from around the region were recently invited to Glenn's Visitor Center to explore the exhibits, listen to speakers talk about the Centennial of Flight celebrations, and tour several research facilities. The writers started the day in the Visitor Center by participating in a scavenger hunt to introduce them to the many interactive exhibits on display. Center Director Donald Campbell greeted the crowd and thanked them for coming to witness the exciting opportunities for travelers afforded by Glenn. Hosted by the Community and Media Relations Office, the event featured speakers explaining the history of the Center, NASA's relation to the Centennial of Flight celebrations, Glenn's educational resources, and the diverse programs available at the Visitor Center. Pictured is *Cleveland Magazine's* Erick Trickey becoming familiar with the Visitor Center exhibits through the scavenger hunt exercise.



Photo by S. Jenise Veris



C-2002-2082

Photo by Doreen Zudell

Characters bring cheer

Although Glenn did not host its annual Children's Holiday Show in 2002, the spirit is still alive. On December 13, many of the former show workers enthusiastically donned costumes to become Tigger, Elmo, Frosty, Rudolph, Mickey, Minnie, Bert, Ernie, Snow White and Seven Elves, Santa, and Mrs. Claus to visit Lewis Little Folks (LLF) Day Care Center. The children eagerly greeted the characters with smiles and hugs of appreciation for the special visit. The Exchange provided treats for the children and volunteers. Despite many key show workers having either left or retired since the first show back in 1964, the Holiday Show committee hopes to recruit enough new workers to bring the event back in 2003. If you are interested in helping with next season's show, contact Tom Bizon, 3-8121, or Alan Hewston, 3-3556. Pictured are children in the LLF Bear Room visiting with Rudolph (Pete Meitner, 0330).

Aspiring astronauts

Hundreds of students once again made their pilgrimage to Glenn for the tenth annual Young Astronaut Day. The students, aged from kindergarten through 12th grade, participated in competitive activities designed to stimulate an interest in aeronautics, space science, and engineering. Glenn engineers, scientists, and organizers of the event hosted activities such as a Bridge Building Challenge to determine the largest strength-to-weight ratio, the Tower of Babel to build the tallest tower for the fewest dollars, and Airplane Computer Optimization to demonstrate some of the tradeoffs involved in airplane design. Glenn's Ultra-Efficient Engine Technology Program Office and the Northern Ohio Section of the American Institute of Aeronautics and Astronautics sponsored the event.



Photo by Katherine Martin



Space station IMAX debut

The highly anticipated new big-screen film, IMAX® *Space Station*, was shown to a preview audience of local journalists and NASA employees and their families on November 19 at the Great Lakes Science Center. Those attending were proud to see ample Glenn influence both on screen and off. As viewers walked into the theatre, they were greeted by a scale model of the International Space Station and an eight-panel information display, both supplied by Glenn. Director of Space Jerry Barna greeted the crowd and thanked them for attending. Glenn employees are eligible for discounts to the movie and for admission to the Science Center exhibits through mid-March while IMAX® *Space Station* is showing. Contact the Exchange Store for details.



Director's Corner

With Donald Campbell

An Odyssey of learning

NASA's mission "to inspire the next generation of explorers" will take flight this year when the Educator Mission Specialist Program gets underway. In an effort to take students on a new journey of learning, last April Administrator Sean O'Keefe unveiled plans to expand the astronaut corp by adding this new type of space explorer.

Coordinated under Associate Administrator for Education Dr. Adena Williams Loston at Headquarters, this dynamic program will motivate students and educators to study science, technology, engineering, and mathematics by expanding exploration into U.S. classrooms. Through the presence of Educator Mission Specialists on the International Space Station, students and educators will have opportunities to engage in real-time discussions and participate in exciting activities that will reinforce these discussions.

News Notes

LESA MEETING: LESA/IFPTE, Local 28, will hold its next monthly membership meeting on Wednesday, January 8, at noon in the

AFGE MEETING: AFGE Local 2182 will hold its monthly membership meeting at 4:30 p.m. on Wednesday, January 8, at the Clifton American Legion Post on All members are encouraged to attend.

CENTENNIAL OF FLIGHT: Glenn will hold a Centennial of Flight kickoff event on January 15 from 10 to 11 a.m. in the The

presentation will outline the Centennial of Flight endeavor, its mission, and where Glenn fits into the overall picture. The Centennial of Flight Volunteer Fair will be held in the same locations on January 29 from 11 a.m. to 1 p.m. During this time, subcommittees will be represented by team leads and people will have the opportunity to talk in more detail with spokespeople in their particular areas of interest.

FRAUD HOTLINE: Aware of waste, fraud, or abuse? Contact the Office of the Inspector General at 216-433-5412 or Confidentiality is maintained.

We're going online

AeroSpace Frontiers will soon be opening new frontiers when it goes online later this month.

Look for details on *Today@Glenn* and in future *AeroSpace Frontiers* issues to learn the Web site address and view the newsletter through the Internet.

News Notes 2003 deadlines

<u>Issue Date</u>	<u>Deadline</u>	<u>Issue Date</u>	<u>Deadline</u>
February 7	January 17	August 1	July 11
March 7	February 14	September 5	August 15
April 4	March 14	October 3	September 19
May 2	April 11	November 7	October 17
June 6	May 16	December 5	November 14
July 7	June 13	January 2, 2004	December 12

Please note that these are the deadlines for brief news items that are placed in the News Notes section. Contact the editor for deadlines on larger articles.

New Work Control number

Can't remember the number to call for building maintenance and repair service? Now there's an easy answer. Simply call **FIXIT (3-4948)** to place a work order for building-related repairs.

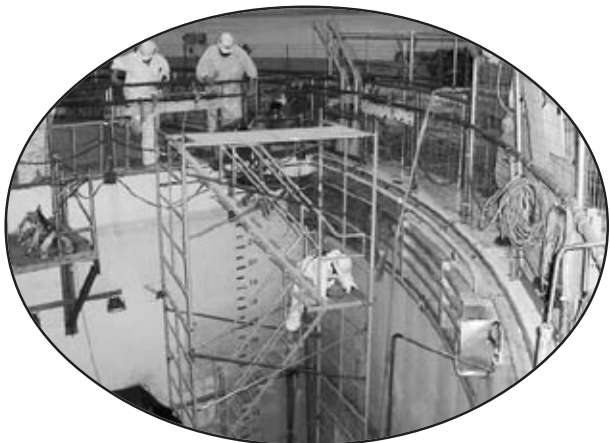


Six new technologies involving advanced space travel, aviation safety, and more efficient airplane engines received awards for innovativeness in NASA's Turning Goals Into Reality Awards Program. The technologies were led by Glenn, with participation from other NASA centers, industry, and academia.

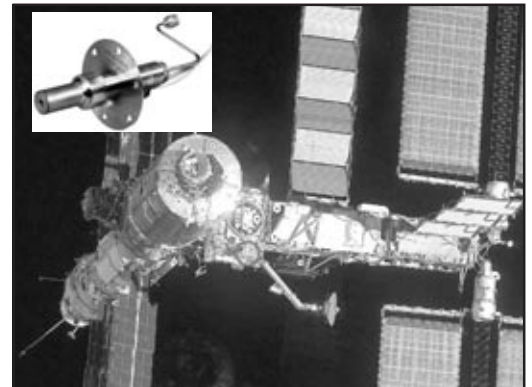


NASA's Freedom to Manage task force visited Glenn in September to solicit input to improve work processes and practices within the Agency. Glenn was the first stop for the task force, which plans to visit all NASA centers.

The U.S. Regulatory Commission approved Glenn's plan for the decommissioning of the closed Reactor Facility at Plum Brook Station. The project should be completed by 2007.



Technology developed by three researchers at Glenn earned the NASA Government Invention of the Year award. The team invented a hollow cathode assembly that is the primary component of the International Space Station's plasma contactor system.



Graphic by Terry Condrich

NASA GLENN YEAR IN REVIEW



Dr. Julian Earls, who began his NASA career in 1965 as a physicist, was named Glenn's deputy director in July. He previously served as deputy director of Operations and the acting deputy director.



Glenn employees and business community leaders extended a warm welcome to the new NASA Administrator Sean O'Keefe during his first visit to the Center in January. O'Keefe spent the day getting acquainted with the Center's people and technology.

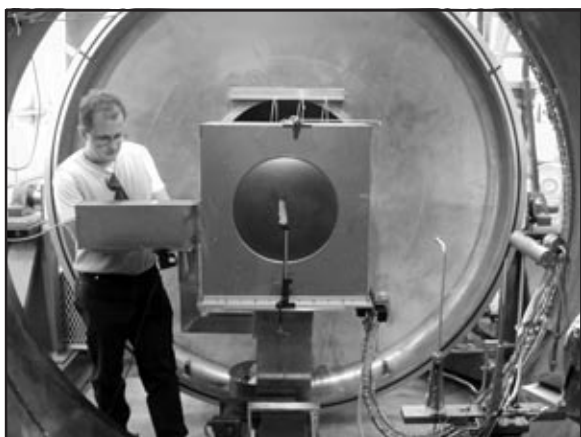


On January 22, Glenn officially retired the Advanced Communications Technology Satellite flag, which had flown on the Center's flagpole since the satellite's 1993 launch.

Several modules of the Agency's Integrated Financial Management (IFM) program became operational at Glenn in 2002. The IFM program is the Agency's effort to modernize NASA's financial and administrative systems and processes.



Glenn was selected to manage the development of the NASA Evolutionary Xenon Thruster (NEXT) system, which will use xenon gas and electrical power to drive future spacecraft.



Risk reduction testing in Plum Brook Station's Space Power Facility verified years of research and development on Boeing's Delta IV launch vehicle and Lockheed Martin's Atlas V launch vehicle.



*Most photos by
Glenn's Imaging
Technology Center*

"Cool" new video on icing

Would you know what to do if the airplane was "iced up" and could no longer maintain altitude? *Icing for General Aviation Pilots*, the latest addition to Glenn's In-Flight Icing series of educational videos for pilots, addresses that and more.

"This video takes the pilot through steps to avoid life-endangering situations that may result from ice accretion on the outside of an airplane," said Kurt Blankenship, a research pilot in the Aircraft Operations Office.

During the hour-long video, pilots learn how to avoid ice, detect ice, minimize exposure, and safely exit icing conditions while following the realistic scenarios of two pilots—one piloting a light, twin-engine aircraft with an ice protection system, and the other piloting a single-engine aircraft without ice protection equipment—from preflight planning through the approach and landing. The effects of icing on aircraft performance, control upsets (wing and tail stalls), and recovery procedures are also discussed.

Targeted specifically for general aviation pilots, the video was the collaboration of Glenn, the Federal Aviation Administration (FAA), and the Aircraft Owners and Pilots Association Air Safety Foundation. Ice accretion imagery captured during NASA and FAA wind tunnel and flight tests, animation, and interviews are included to illustrate the information presented in the scenarios.

"Partnering with regulatory agencies and relevant pilot associations has enabled Glenn researchers to understand specific issues and tailor the breadth of knowledge presented to the targeted audience," explained Dr. Judith Van Zante (QSS), Icing Branch.

Tailplane Icing, the first video of the In-Flight Icing series, was produced using insights gained from the NASA/FAA Tailplane Icing Program. *Icing for Regional & Corporate*



Pilots, the second in the series, is intended for turboprop aircraft pilots. This video was written by Glenn aircraft icing experts, the FAA, and the Air Line Pilots Association.

"Response to the latest video has been very favorable," Van Zante said. "The NASA name adds tremendous credibility—pilots know the information is based on solid research from both our icing research aircraft and Icing Research Tunnel. They appreciate that we're playing test pilot, so they don't have to."

Editor's note: To order videos or for more information about Glenn's Icing Research program, visit <http://icebox.grc.nasa.gov>.

Glenn volunteers build ramp to education

BY S.JENISE VERIS

Glenn innovation and a teacher's initiative recently helped build a ramp that enabled a Lincoln West High School student to regain his independence and access to education.

Susan Kilkenny, an instructional aide for orthopedic and visually impaired students

Photo by Elaine Kimbler



at Lincoln West, discovered that Mitchell Rios, one of her students who is quadriplegic, had moved to a new home that was not wheelchair accessible.

"I observed Glenn's outreach in the community and decided to advocate on behalf of Mitchell," Kilkenny said, "so, I asked my husband, Mark (Systems Management Office), to inquire if there was a group at NASA that could provide assistance. This led me to Greg Schade (Tactical Support Branch)

who previously worked with Habitat for Humanity."

Schade enthusiastically agreed to build the much-needed ramp and formed a team to get the job done. Jeff Swan, deputy chief, Research Testing Division (RTD), assembled a group of volunteers from RTD. Vince Verhoff, with consultation from Floyd Truskot, designed the ramp and provided the blueprint. Through affiliation with Schade, employees of the Federal Aviation Administration (FAA) donated the bulk of the construction material, while Schade procured the proper building permits. Less than a month from the initial request, the people and plans were in place to build the ramp, which was constructed in 2 days.

"It was such a positive experience to watch us proceed from a pile of wood to

Some of the volunteers "load tested" the ramp before attaching the rails. Among those pictured are RTD volunteers: Greg Schade, Luis Beltran, Floyd Truskot, Wendell White, Vincent Verhoff, Ruben Ramos, Emye Benavage, Leo Robinson, Al Matthews, Bob Freedman, Jim Bowser, Nick Varaljay, Denise (Bob) Ryant, Eric Sockel, Dennis Dicki, Wade Arida, Jim Mullins, Sandra (Mark) Buettner, John Naglowski, and Jeff Swan; and FAA's Elaine Kimbler and Gary Klinger.

Continued on next page

Centennial takes flight in 2003

Continued from page 1

A. It's hard to say what they might have been able to do with current technology, but they made the most of what they had. There was no technology road map to follow. For example, there was no wind tunnel around for them, so they developed one. I believe their spirit of ingenuity is alive and well at Glenn today.

Q. Do you believe that as a research center it is an especially good opportunity for us at Glenn to participate in this celebration of flight and recognize such historical efforts?

A. We're part of the aerospace community and have been involved in aeronautics since inception of the Center. Glenn has made significant contributions in aerospace technology. NASA was involved in many of the advances for commercial flight. In fact, we like to use in our speeches, "nobody flies on gliders . . . aircraft don't go any place without propulsion." You need propulsion and propulsion is what it's all about at Glenn.

Q. Do you think this centennial celebration will help boost interest in aeronautical careers?

A. Yes. It will help promote aeronautics throughout our educational system. I think this celebration will rekindle students' interest, while not necessarily in aeronautics and space but in science and engineering because that's where it's all based.



Q. What sparked your early interest in the field of mechanical engineering?

A. I enjoyed building model planes and repairing cars and anything mechanical.

Q. How about your children and grandchildren? Are you sharing your knowledge and interest in aeronautics and spaceflight?

A. Oh yes. My grandson is really into *Star Wars* and reads everything I send him. Two of my sons are engineers but they are not in the field of aeronautics.

Q. Over the course of your career, have you met any people in aeronautics that you admire?

A. While working for the Air Force in the 1970s, I got to know one of the inventors of the jet engine whose office was next to mine. We had daily conversations about jet engines. He was Hans von Ohain, a German engineer/scientist who co-invented the turbine engine. I also met some important people in aviation back

then, such as Sir Frank Whittle. There are still a lot of people in the industry that are making new discoveries.

Q. Your enthusiasm for aeronautics is contagious. Do you enjoy opportunities to get away from the management side and be an engineer again?

A. Yes. It's exciting. There's always something new. In fact, I recently visited Tuskegee University. It was humbling to stand on the training field for Tuskegee Airmen and visit the displays of General Chappie James' accomplishments. I can't describe what it felt like as I stood there and thought about what these people did and the obstacles they overcame. I have also visited historic sites in Dayton that gave me similar feelings. It was like walking across the prairie with Wilbur and Orville Wright.

Q. Do you think the rate of technological advancements will continue?

A. Yes. I'm amazed at how we reinvent ourselves. Right now we're talking about doing a new program—Integrated Space Transportation—which has elements similar to the advanced propulsion concepts in the two-stage orbiting vehicle program that I worked on in the early 70's with the Air Force. With the advances in technology we have a chance to improve. I think in the future we're going to see the kind of vehicles seen in *Star Wars*.

Q. Are there any specific centennial events you're looking forward to attending?

A. I plan to attend as many as I can. Although our focus has been on contributions to Ohio, the celebration will be international. It will be continued beyond what is being done in Dayton, and we here at Glenn will be major participants, both in Dayton and in Cleveland. ♦

Glenn teams with FAA in outreach

Continued from page 8

a functional, sturdy ramp. Everyone seemed to find their niche and provide a valuable contribution, whether it was layout, posthole digging, sawing, pilot drilling, screwing nails, or sweeping," Swan said. "It was a great example of how well the FAA and NASA work to-

gether, not only professionally but also personally, to make a positive impact in the community."

The immediate impact is Rios' almost perfect school attendance since the ramp was built. ♦

Salzman and Sehra earn Presidential Rank honors

Glenn's Jack Salzman, chief of the Microgravity Science Division, and Dr. Arun Sehra, director of Aeronautics, were recently honored with the 2002 Presidential Rank Meritorious award. They are among 45 NASA senior executives who have been chosen to receive this prestigious recognition for their sustained excellence in Government service.

Each of the NASA honorees was nominated and chosen for their awards after a very rigorous selection process, and then personally approved by President Bush.

Of all the Presidential Rank awards being granted Governmentwide this year, NASA employees received an impressive 11 percent of the Distinguished and 11 percent of the Meritorious awards.



Salzman



Dr. Sehra

Barna and Bober retire

Continued from page 1

management and line management was the right path for me."

Barna served as acting center deputy director (twice), deputy director of Space Flight Systems, and deputy director for Space Station Freedom. However, his efforts in support of the Nation's energy program, the development of the International Space Station, and Glenn's involvement in bioscience are some of the achievements that gave him the greatest sense of pride during his 39-year career at Glenn. Among other honors, he received a NASA Exceptional Service medal in 1990 and the Presidential Rank of Meritorious Executive in 1995 and again in 2000.

During his 35-year career, Bober's greatest source of pride also proved to be his greatest personal challenge while working on the Advanced Turboprop Project (ATP), a NASA innovation to resurrect a more fuel-efficient prop-fan aircraft. The project was initiated to rescue the U.S. airline industry following the 1973 oil embargo, which tripled aircraft fuel costs.

"There were many challenges in demonstrating the viability of high-speed propellers, but one by one they were overcome," Bober recalled. "The opportunity to see something go all the way from a small activity to a flight demonstration was great."

Bober supervised a group responsible for experimental and computational research on advanced propellers as a member of the NASA-Industry ATP team, which later earned the 1987 Collier Trophy. In 1990, he earned the NASA medal for Exceptional Engineering Achievement and in the same year became chief of the Turbomachinery Technology Branch. He was acting deputy chief of the Propulsion Systems Division from 1995 to 1996, prior to his latest appointment.

For the past 6 years, Bober has had the shared responsibility as deputy director of R&T to maintain, manage, and allocate Glenn's research and technology core competencies and the workforce to deliver Glenn aeronautics and space programmatic commitments.

Bober said that, for now, his retirement plans are focused on having fun—taking weekday excursions in his Corvette and playing more golf. Barna plans to be a consultant to organizations or companies that can best utilize his experience and capabilities. He will support nonprofit organizations by serving in roles such as president of the Board of Trustees of the Global Issues Resource Center located on the Cuyahoga Community College's Eastern Campus. ♦

This record reflects well on NASA's continued leadership in advancing the Nation's science and technology agenda. ♦

In Appreciation

My family and I would like to thank all who through their kind words and thoughtfulness provided great comfort to us during my wife's battle with cancer and at the time of her death.
—John Adamczyk

We would like to thank employees from around the Center who provided assistance and attended the Veteran's Day observance on November 14.

—Veterans Awareness Committee

I would like to thank all of the employees at the Center for their prayers, support, and expressions of sympathy to my family and me on the death of my father. We are so fortunate to work with and have such caring friends to carry us through such difficult times.
—Terry Ross

Thank you for your condolences. We will always be grateful for your kindness and generosity.
—Bernice Godbott & family

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DEADLINES: News items and brief announcements for publication in the February issue must be received by noon, Friday, January 17. The deadline for the March issue is noon, Friday, February 14.

Submit contributions to the editor via e-mail, doreen.zudell@grc.nasa.gov, fax 216-433-8143, phone 216-433-5317 or 216-433-2888, or Ideas for news stories are welcome but will be published as space allows.



People

SFA Honorees



Dr. Steinetz



Dunlap

Three Glenn employees are recent recipients of a Space Flight Awareness award, one of the highest and most prestigious awards available to employees of the NASA, industry, shuttle, and space station team.



Anthony

Dr. Bruce Steinetz, Patrick Dunlap and Judith Anthony (ZIN) were among 250 Government and industry honorees invited to view the STS-112 shuttle launch, tour the Kennedy Space Center facilities, and attend a reception celebrating their dedication to quality work and flight safety in support of our Nation's space program.

Dunlap and Steinetz, members of the Mechanical Components Branch in the Structural and Acoustics Division, were recognized for their design and development of a new robust thermal barrier/structural seal for critical joints on the space shuttle solid rocket motor nozzle-to-case joint. The new thermal barrier is a unique carbon-fiber-based seal designed to withstand the high-temperature environment (5500 degrees Fahrenheit) in a solid rocket motor.

Anthony supports Glenn's Microgravity Science Division as lead electrical engineer for the Space Acceleration Measurement Systems (SAMS) project. She was recognized for her expertise in the design of the SAMS Remote Triaxial Sensor. Her leadership led to flight verification more than a month ahead of schedule.

In Memory

Chester Barstow, 88, who retired from Glenn in 1980 with 35 years of service, recently died. He had worked as an aerospace mechanic.

Michael Godlewski, 64, who retired from Glenn in 1991 with 29 years of service, recently died. Godlewski was an expert in solar cell development and worked as a manager of university grants and independent contracts while at Glenn.

Betty Jane Hood, 81, who retired from Glenn in 1980 with 35 years of service, recently died. She worked as a data

analyst and mathematician in the Computer Services Division.

Sidney Huntley, 85, who retired from Glenn in 1973 with 34 years of service, recently died. He began his NASA career at Langley Field in 1941, then moved to Cleveland in 1944 to work as a research engineer.

Richard "Babe" Snider, 80, who retired from Glenn in 1973 with 29 years of service, recently died. While at Glenn, he worked as a supervisory supply specialist.

Behind the Badge

a closer look at our colleagues

Ken O'Connor



Job Assignment: Senior safety engineer in the Safety Office

Time at Glenn: It was 13 years on September 11, 2002.

Hometown: I'm originally from Pittsburgh, PA. (Yes, I am a diehard Steelers fan!)

Describe your family: My wife of 13 years, Janet, and I have two terrific sons—Sean (10) and Kevin (7), and a gregarious golden retriever named Barkley.

Favorite music: I like a variety of music but prefer classical or jazz.

Favorite book or magazine: My favorite book is the *Bible*. I usually read *National Review* and *Popular Mechanics* magazines monthly, and enjoy reading American and world history.

Favorite movie: I enjoy older movies such as *Shenandoah*, *The Bells of Saint Mary's*, *True Grit*, and the *Quiet Man*.

Person you most admire: As a husband and father, and as I have grown older, I have come to admire and appreciate my parents much more. They are part of the generation that endured the Depression, World War II, Korea, and all the societal changes in this country, while raising me and my siblings. Recently, my dad was diagnosed with non-Hodgkin's lymphoma and received chemotherapy for several months. I never heard him or my mom complain about his situation. Rather, what I observed was strength of character to press on, and the confidence in Jesus' words, "in this life we will have trouble, but be of good courage for I have overcome the world."

Activities when away from Glenn: We're involved with our sons' activities (sports, art, music) and in our church, Grace Church in I also enjoy camping, fishing, and other outdoor recreation and physical conditioning activities.

What do you see as an area of expertise at Glenn: It is always encouraging to read in a technical article about an engineering or scientific advancement developed by Glenn personnel. There is much that Glenn contributes to the region and Nation, and we should all be proud of the work that is done here. The professionalism and persistence exhibited by many are a motivator to me.

Turbine drivers removed from High Pressure Facility

BY DOREEN B. ZUDELL

What would it cost to dismantle two 107-ton turbine engines and 35 tons of associated hardware? Fortunately for Glenn, it was a case of "one man's junk is another man's treasure." Recently a local company removed the equipment free of charge, saving the Center well over \$135,000 in demolition and restoration costs.

Mothballed since 1984, the General Electric turbine engine drivers had been used in the High Pressure Facility for turbo machinery research. When the facility was updated, new and upgraded air compressors replaced the existing drivers.

"After 5 years of searching for a company that could find a use for the drivers and remove the equipment at no cost to the Center, we located Independence Excavating in Independence, OH," explained Steve Keys, contract manager, Construction Management Branch. "The company had a buyer for the turbines who agreed to pay Independence Excavating for the removal and delivery of the equipment."

Due to the size and weight of the equipment, the task of removing the drivers,

concrete bases, ducts, and associated piping was a unique and challenging one for the Construction Management Branch. This task required a team of personnel from across the Lab, enlisting the skills of the safety and environmental offices and their Waste Management Team. Coordinating the transportation of oversized equipment, such as the 650-ton crane and the two 175-foot-long trailers, also necessitated participation from the Ohio Department of Transportation, the Ohio Highway Patrol, and the Cleveland Hopkins Airport.

"Safety was the number one priority on this project," explained Dave Diamond, construction manager, Construction Management Branch. "Due to the professionalism of all those involved, including that of the team from Independence Excavating and its subcontractors, the project went smoothly and with little impact on research being conducted inside the facility."

Other project team members include Marlene Metzinger, project manager, Facilities Engineering and Architectural Branch; Erick Lupson, contracting officer, Services and Construction Branch; Rolf Richter, construction manager,

Construction Management Branch; Greg Schade, electrical lead, Tactical Support Branch; and James Bowser, customer, Aviation Environments Test Engineering Branch. ♦

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Photo by Marvin Smith



This 650-ton crane hoisted the drivers onto the two 175-foot-long trailers.

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